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ACQUISITION,
TECHNOLOGY
AND LOGISTICS

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MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (ACQUISITION, LOGISTICS AND TECHNOLOGY)
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ASSISTANT SECRETARY OF THE AIR FORCE (ACQUISITION)
DIRECTOR, DEFENSE LOGISTICS AGENCY
PRESIDENT, DEFENSE ACQUISITION UNIVERSITY

SUBJECT: Product Support Boundaries

I applaud your recent and ongoing efforts to implement innovative product support strategies to improve readiness and reduce costs. Your efforts are demonstrating a measurable impact on equipment availability in Iraq, material availability across the DoD, and our product support cost structure.

Your efforts also identified areas where we needed to adjust policy and employ international standards to ensure individual weapon system support strategies fit within our overall support structure for the joint force and coalition operations. We addressed those areas through a series of policy memoranda and standards endorsements over the past two years. For easy reference, the Total Life Cycle Systems Management (TLCSM) Executive Council summarized those memoranda into a single reference document, "Product Support Boundaries," as attached.

I hope you and your program offices will find the attached helpful as we continue to transform our weapon system support structure. The "Product Support Boundaries" is available on the Defense Acquisition University Logistics Community of Practice website at http://acc.dau.mil/log. I also would welcome any feedback you have on this reference document. Please provide any comments or suggestions to Mr. Lou Kratz at Lou.Kratz@osd.mil.

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Acting

Attachment
As stated

PRODUCT SUPPORT BOUNDARIES (PSB)

1 August 2004

FOREWORD

This document delineates the strategic construct for innovative sustainment, bounded by applicable policy and standards, to ensure a consistent support structure for the warfighter. It consolidates into a single document recommended approaches to sustainment with associated policy and standards for key support areas. It was developed to guide Program Managers and their sustainment staffs in pursuit of more effective ways to support new and current weapon systems.

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PRODUCT SUPPORT BOUNDARIES (PSB)

1. INTRODUCTION

1.1. GENERAL

DODD 5000.1, The Defense Acquisition System, establishes the Program Manager (PM) as the total life cycle system manager. As such, the PM is responsible for executing product support strategies that meet operational requirements while driving down the Total Ownership Cost (TOC) of weapon systems. Effective sustainment of weapon systems across the life cycle requires an integrated logistics chain that operates within the joint and Services logistics performance-based business environment to provide combat power across the total force.

The PSB provides the strategic construct for innovation within a consistent support structure for the warfighter. It includes procedures to explore solutions that extend the support "envelope" and methods to enhance best value solutions while maintaining operational military effectiveness. The PSB is to be used in conjunction with "Designing and Assessing Supportability in DOD Weapon Systems: A Guide to Increased Reliability and Reduced Logistics Footprint," 24 Oct 2003, and "A Program Managers (PM) Guide to Performance Based Logistics (PBL)," currently under revision. "Designing and Assessing Supportability in DOD Weapon Systems: A Guide to Increased Reliability and Reduced Logistics Footprint," addresses the life cycle role of the PM to translate and refine the user's desired capabilities into actionable, contractible and measurable system performance and supportability requirements. "A Program Managers (PM) Guide to Performance Based Logistics (PBL)" provides PMs with tools to implement and assess PBL efforts on defense acquisition programs.

The PSB advances the understanding of support responsibilities and boundary conditions within Total Life Cycle System Management (TLCSM). The PSB is to be used by PMs, Product Support Integrators, force providers, and product support providers. It is equally applicable to new and current weapon systems. It provides a source document by which to prioritize operational, sustainment, personnel and training issues, consistent with existing DOD guidance.

1.2. AIM

The aim of the PSB is to describe the boundary conditions for product support strategies that allow innovation but ensure consistency and interoperability across programs. The PSB provides strategic guidelines for the development of coherent and consistent sustainment solutions to optimize operational effectiveness within affordable costs.

1.3. OBJECTIVES

Specific objectives of the PSB are to:

- Guide PMs in developing sustainment solutions that ensure operational effectiveness and achieve best value.
- Ensure sustainment solutions are consistent with policy and standards.

- Provide criteria and a baseline for continuous improvement of system sustainment solutions.
- Evaluate the impact of innovative sustainment solutions on short and long-term readiness.

1.4. REQUIREMENT

All PMs are required to assess and implement support strategies against the PSB consistent with DODD 5000.2 and Service implementing guidance.

2. STRUCTURE

2.1. GENERAL

The PSB is organized by Key Support Areas (KSAs) with Guiding Principles. These Guiding Principles constitute the "framework" of acceptable sustainment solutions.

2.2. DEFENSE STRATEGIC INTENT

While weapon system programmatic action is first and foremost directed by formal and specific performance capability requirements identified through the Joint Capabilities and Integrated Development System (JCIDS) process, logistics chain innovations and solutions are expected to derive from PM implementation of Quadrennial Defense Review (QDR) and Logistics Transformation goals and requirements. The QDR requirements include: project and sustain the force with minimal footprint; implement Performance Based Logistics (PBL) to compress supply chains where operationally and economically feasible; improve readiness for major weapon systems and increase availability of commodities; employ corrosion technology to prolong life; and reduce logistics response times to industry standards. Logistics Transformation requirements include: advancing the integration of logistics with operational planning and meeting warfighter needs for more agile, adaptive support.

2.3. KEY SUPPORT AREAS

Guiding Principles have been developed to associate operational effectiveness outcomes with "best of breed" logistics practices. The principles offer a comprehensive approach to weapon system support and should be applied as a total package. A brief description of each KSA follows:

2.3.1. **Operational Concepts**. The readiness-driven application of current and future operational logistics procedures, doctrine and concepts.

2.3.2. **Logistic Support / Sustainability**. The ability to provide logistics support sufficient to generate, deploy, operate, sustain and recover forces in the conduct of operations to levels and degrees of readiness and performance capability specified by the warfighter.

2.3.3. **Engineering and Asset Management**. The delivery of agreed upon level of performance by minimizing the need for repair and maintenance through high levels of reliability, improved maintainability and end-to-end support.

2.3.4. **Materiel Flow.** The creation of an integrated supply chain that offers speed, total asset visibility, certainty, timeliness, and affordability.

2.3.5. Industry and Innovation. The shaping of the relationship with industry to reduce costs and create value to defense through a flexible, intelligent logistics support chain. An intelligent logistics support chain is one that operates with minimal human intervention to produce the right output at the right time and at the right place.

2.3.6. Integrated Knowledge Enterprise and Logistics Command, Control, Communication, Computing and Information (C4I). The integration of all logistics data and the extrapolation of knowledge from that data without human intervention.

2.3.7. People and Training. The logistics workforce is a lead component of the Strategic Human Capital Plan. The timely acquisition, retention and training of the logistics workforce are critical to support of an operationally ready force.

2.3.8. Reduced Total Ownership Costs (R-TOCs). The critical examination of weapon system TOCs, assessing long-term considerations of acquisition, including the cost of operating, training, supporting, sustaining and disposing.

2.3.9. Resource Management. The management of financial processes to ensure accountability and optimum use of resources with equitable attention to investment in supportability-related analyses, products, and services that can be expected to generate a high return in terms of sustained system readiness and reduced costs.

2.3.10. Environment and Safety (E&S). The compliance with appropriate E&S legal, regulatory and policy requirements.

2.4. PROCEDURES

The boundaries of the PSB are defined by Guiding Principles within which the PMs are expected to design sustainment solutions and through which defense-wide cooperation and collaboration will be achieved. PMs will use PSB guidelines to develop and maintain their sustainment solutions. The PSB is applicable to new and current systems. PMs may operate outside the PSB when it proves to be more economically and operationally feasible and with the approval of their Service Acquisition Executive (SAE). The deviation should be highlighted in an appropriate business case analysis (BCA) and the TOC benefit quantified together with the impact on support chain integration and on operational effectiveness. The PM must identify both the advantages and disadvantages in adopting a support strategy that diverges from the PSB guidance. SAEs will ensure that the PSB guidelines and all logistics requirements are addressed in the appropriate documentation.

2.5. POINTS OF CONTACT (POC) FOR GUIDING PRINCIPLES

The POC for all Guiding Principles is the Assistant Deputy Under Secretary of Defense (Logistics Plans and Programs), ADUSD (LP&P). ADUSD (LP&P) will:

2.5.1. Assist Service staffs and PMs to better understand the issues surrounding Guiding Principles.

2.5.2. Act as a focal point to ensure the relevant stakeholders across defense are aware of the implications of any planned divergence and have the opportunity to agree or voice their concerns. The PM will address the concerns and raise any issues in the appropriate BCA and TLCSM documentation.

2.5.3. Inform stakeholders when a Guiding Principle is amended or deleted as a result of defense / single Service initiatives / consensus amongst stakeholders.

3. DOD LOGISTICS TRANSFORMATION

3.1. Scope

The future defense logistics vision is embodied in the ongoing DOD Logistics Transformation effort. Logistics Transformation is directed toward achieving the Joint Staff Focused Logistics Concept and embodies numerous initiatives, concepts and modernization efforts. It describes at a strategic level how defense logistics should work to support the warfighter in 2015 and beyond.

3.2. Context

Sustainment solutions should support Logistics Transformation. A key challenge for PMs is to optimize the trade space between output effectiveness and improved efficiency by capitalizing on those Logistics Transformation initiatives most relevant to weapon system life cycle management, specifically those listed below.

3.3. Initiatives

3.3.1. **Total Life Cycle System Management (TLCSM).** Under TLCSM, the PM is responsible for the overall management of the weapon system life cycle to include: timely acquisition of weapon systems meeting warfighter performance requirements, integration of sustainability and maintainability during acquisition process, total asset visibility, including unique item identification, and weapon system sustainment to meet or exceed warfighter performance requirements at best value to DOD.

3.3.2. **Depot Maintenance Partnerships.** In accordance with 10 U.S.C. 2464, it is DOD policy to maintain depot maintenance CORE capabilities in government owned and operated facilities using government equipment and personnel to assure adequate depot maintenance support. DOD organic depots are enabled and empowered to develop appropriate partnerships with the commercial sector, while recognizing the legitimate national security need for DOD to retain organic depot maintenance capability.

3.3.3. **Conditioned-Based Maintenance Plus (CBM+).** CBM+ focuses on inserting technology into both new and legacy weapon systems to support improved maintenance capabilities and business processes. Under CBM+, PMs are encouraged to consider enhanced prognosis/diagnosis techniques, failure trend analysis, electronic portable or point of maintenance aids, serial item management, automatic identification technology and data-driven interactive maintenance training. Moving toward CBM+ with more accurate predictions of impending failures based on condition data will assist PMs to improve operational capability.

3.3.4. **End-to-End Distribution.** End-to-end distribution is directed toward streamlining warfighter support by providing materiel, including retrograde and associated information, from the source of supply or point of origin to the point of use or disposal on a worldwide basis. This initiative is being led by USTRANSCOM as the newly designated Distribution Process Owner. Sustainment solutions must be integrated into the defense end-to-end

distribution process to ensure effective, efficient support for in-garrison and deployed operations.

3.3.5. Enterprise Integration. Warfighters and all other stakeholders must have access to near real time, actionable information. This information will be provided by modern, commercially based software products, including Radio Frequency Identification, that have been rapidly implemented to enable reengineered logistics processes and business rules.

4. OPERATIONAL CONCEPTS

4.1. Scope

Operational Concepts include the readiness-driven application of current and future operational logistics procedures, doctrine and concepts.

4.2. Context

Tension, crisis and conflict will continue to occur rapidly and possibly unexpectedly, with unpredictable volatility and intensity and sometimes with unforeseen consequences. Each crisis will be characterized by pre-conflict preparation, conflict prevention, conflict and post-conflict activities. The inter-relationship between these activities will be complex and the types and scale of operation, within each, varied. Sustainment solutions must be sufficiently flexible to sustain forces that are executing mission objectives.

4.3. Guiding Principles

The Operational Concepts Guiding Principles are:

4.3.1. Doctrine and Future Concepts. Sustainment solutions must enable joint, single Service, and coalition doctrine. They must be adaptable to future concepts.

4.3.2. Operational Supply Chain Requirements. Sustainment solutions must operate within the end-to-end logistics chain for materiel needed by deployed forces and must be flexible enough to meet the full spectrum of contingencies with no loss of operational capability or tempo.

4.3.3. Contractor's Roles, Responsibilities and Acceptance of Risks During Phases of Warfare. Sustainment solutions need to clearly identify a contractor's roles, responsibilities, and acceptance of exposure to risks during all phases of conflict. The operational risk of contractors failing to meet their obligations should always be made clear and fallback or exit strategies identified.

4.3.4. Contractors on the Battlefield. PMs should develop strategies that minimize the need for contractors on the battlefield. When required, single Service guidelines are to be followed. In particular, contractor support must be capable of integrating with the defense logistics chain, including logistics C4I and e-business routines. Subject to specific terms and conditions of the contract, contractors on the battlefield are considered as a defense resource for re-tasking by an operational commander, as required.

4.3.5. Contractors Involved in the Seamless Transition to Operations. Sustainment solutions involving contractors must ensure a seamless and transparent transition from in-garrison to deployed support. Contractor support must be integrated into the defense logistics chain with minimum training and disruption within readiness timetables.

4.3.6. Cumulative Contractor Logistics Support (CLS) Risk. Employment of contractors who are executing specific performance based agreements must not detract from the inherent flexibility of military capability. This is to be judged at a single Service level.

5. LOGISTICS SUPPORT / SUSTAINABILITY

5.1. Scope

The ability to provide logistics support sufficient to generate, deploy, operate, sustain and recover forces in the conduct of operations to levels and degrees of readiness and performance capability specified by the warfighter.

5.2. Context

Logistics Support and Sustainability comprises many facets. Logistics Support deals with those support resourced products required to undertake planned activities and to generate a force for peacetime and contingent operations. Logistics Sustainability is the ability to deliver the resources required by a deployed contingent force to enable force closure, conduct and sustain operations, and recover to the home base. The strategic lift aspects of force deployment, sustainment and recovery are addressed within Logistics Sustainability. Logistics is recognized as a strategic enabler and a capability component in its own right. The Logistics component will be the critical path in terms of acquiring and building up sustainment stocks for the operations, a timeframe that spans the entire period from political commitment to recovery and recuperation of the force.

5.3. Guiding Principles

The Logistics Support / Sustainability Guiding Principles are:

5.3.1. Peak Sustainability Requirements. The peak sustainability requirement is support of the worse case scenario, given the potential full spectrum of contingencies. Product support strategies must be developed to ensure consistent, reliable support during the worse case scenario.

5.3.2. Analysis of Types of Overseas Operations Against Regions. Weapon system concept of operations and approved architectures define types of operations. This information provides a framework for logistic planners.

5.3.3. Sustaining Initial Deployments. Sustainment must include force deployment with sufficient stock to meet military objectives. The Services will determine the number of days of supply for deploying forces.

5.3.4. Sustaining Intervention Operations (Combat). The Services will identify anticipated surge requirements or enter into performance agreements with providers who identify these requirements as part of overall systems performance.

5.3.5. War Reserves. War reserves will be considered and authorized when the equipment / commodities cannot be provided within the required need time.

5.3.6. Post-Conflict Reconstitution. There is to be no advance provision to reconstitute logistics inventories or replace operational consumption / losses prior to the political commitment to an operation. Reconstitution will commence as soon as possible after funds are authorized by Congress. The type of reconstitution will be dependent upon the type, intensity and duration of the operation. During reconstitution, state of the art supplies, equipment and munitions will be purchased to replace older versions.

6. ENGINEERING AND ASSET MANAGEMENT (E&AM)

6.1. Scope

The aim of E&AM is to deliver an agreed upon level of performance by minimizing the need for repair and maintenance through high levels of reliability, availability, improved maintainability and end-to-end support.

6.2. Context

Reliability will influence capability factors such as equipment / mission performance as well as supportability factors, such as support infrastructure or maintenance and repair cycles. Consideration of "high reliability – low maintenance"' designs to meet exacting Reliability, Availability & Maintainability (RAM) requirements could minimize maintenance infrastructure while optimizing both reliability and availability. Emphasis upon availability ensures that the weapon system is ready to undertake a mission whenever and wherever tasked. Maintainability is an equally important factor. Weapon systems should be designed to be easily maintained and repaired on deployments, preferably and, if appropriate, by the operator with "on demand" training downloaded to a programmable maintenance aid. Emphasis should be placed on implementing condition-based maintenance tools and techniques, and on improving fault prediction, diagnostics and prognostics. Information on equipment location, tasking, usage, configuration, health status and resource consumption will need to be captured.

6.3. Guiding Principles

The E&AM Guiding Principles are:

6.3.1. End-to-End Process. Support strategies are to be consistent with DODD 5000.1, The Defense Acquisition System; the end-to-end E&AM process, which emphasizes design for RAM; and the Joint Requirements Oversight Council approved Focused Logistics Concept.

6.3.2. Integrated Logistics Support (ILS) and RAM disciplines. ILS and RAM disciplines have a direct impact on operational effectiveness and should be used in formulating sustainment solutions. Reliability, in particular, is a performance issue and is to be afforded full consideration along with other factors such as system performance, cost, and schedule. Required reliability is included in the requirements generation process, identified in Chairman Joint Chief of Staff Instruction 3170.01D, Joint Capabilities Integration and Development System (JCIDS). Corrosion prevention will be emphasized as a key element of RAM.

Preventive maintenance is to be optimized through use of reliability analysis and CBM+ techniques to generate maintenance specifications and maximize availability. "Built for life" or "throw away" designs should be considered, as appropriate.

6.3.3. RAM Performance Indicators. RAM in-service measurements are essential. Key performance metrics will be tailored to individual performance based agreements with warfighters and providers. Corrosion control will be emphasized as a significant element of RAM.

6.3.4. Ease of Maintenance Assessments and Maintainability Demonstrations. Ease of maintenance will be demonstrated as part of the test and acceptance process. Likewise, logistics/maintainability demonstrations should be used to quantify Mean Time to Repair and to confirm that optimum design for maintainability and availability has been achieved. Sustaining engineering will be employed to ensure integrity of a system, to maintain operational reliability, to approve design changes and to validate system conformance with established specifications and standards.

6.3.5. Repair Process. The repair process for exchangeable components should accommodate estimated operational duration, theaters of operations and concepts of operation while adhering to the Source of Repair Assignment Process (SORAP) and to the statutory requirements for CORE. Repair of assemblies should be out of theater to minimize required lift of intermediate maintenance assets.

6.3.6. Commonality. Procuring common instead of unique or peculiar platforms, systems, subsystems and components, as well as common enabling capability such as test equipment and repair equipment, should be given maximum consideration to minimize logistics footprint and cost.

6.3.7. Dehumidified Preservation. Repair of damage due to corrosion on weapon systems and equipment represents an important life cycle consideration. To minimize the need to repair corrosion discrepancies throughout the life cycle, the use of dehumidified preservation should be maximized when establishing support strategies.

6.3.8. Technical Documentation. Technical data will be maintained by the best value engineering service provider, stored in accordance with the guidance of the Data Management Community of Practice, and will interface with the Services Enterprise Systems. It will be available for real-time update and for "on demand" download to portable maintenance aids. Product data will be developed consistent with ISO 10301: Product Data Representation and Exchange. End item configuration management will be accomplished consistent with Electronic Industries Alliance (EIA) Standard 649, "Configuration Management;" the commercial standard for managing the interchange of this data is EIA Standard 836, "Configuration Management Data Exchange and Interoperability." Data management will be accomplished via EIA Standard 859, "Industry Consensus Standard for Data Management," currently in draft. Technical manuals will be prepared consistent with SD1000D, "International Specification for Technical Publications Utilizing a Common Source Database."

6.3.9. Software Support. PMs should take advantage of Commercial-Off-The-Shelf (COTS) solutions in preference to acquiring unique software solutions.

6.3.10. Obsolescence Management Plan / Diminishing Manufacturing Sources (DMS) Management. Obsolescence and DMS will be addressed proactively as part of a program's support strategy. Significant savings can be realized with early identification and replacement of obsolete items or components impacted by DMS. PBL strategies should explicitly shift the responsibility for obsolescence management to industry.

6.3.11. CBM+ Techniques. All future acquisition of military platforms and equipment will include health-monitoring systems and diagnostics / prognostics. Non-compliant systems should be accepted into service only when justified. Selected legacy systems should be retrofitted with compliant health monitoring / prognostics systems where cost-effective.

6.3.12. Cannibalization. Cannibalization is strictly an option of last resort. It must not replace prudent and sensible plans to provide operational sustainability.

6.3.13. Intellectual Property Rights. PMs must ensure the necessary rights are secured to use proprietary information for all intended purposes and by all intended users, which may include other contractors and down stream competitors.

7. MATERIEL FLOW

7.1 Scope

The aim of Materiel Flow is the creation of an integrated supply chain that offers speed, certainty, timeliness, total asset visibility and cost-effectiveness.

7.2. Context

The defense inventory, including inventory managed for defense by the private sector, must be effectively managed, at optimum volume and value levels, commensurate with required levels of performance, risk and cost. PMs should exploit opportunities to compress and accelerate the end-to-end materiel process and to enable the further rationalization of storage and distribution infrastructure. Total asset visibility and asset tracking are critical to achieve effective and efficient inventory management.

7.3. Guiding Principles

The Materiel Flow Guiding Principles are:

7.3.1. End-to-End Process. Support strategies are to be consistent with the end-to-end Materiel Flow process, from factory to the ultimate consumer.

7.3.2. Single View of the Supply Chain. There is a clear need for real-time, end-to-end materiel management and visibility, including deployed solutions. The need to have a single view of the supply chain to include both organic and commercial provider inventories through enterprise integration is required. Sustainment solutions are to be consistent with this approach.

7.3.3. Unique Item Identification (UID). Successful delivery of operational support requires unique item, equipment and spares identification. The DOD requires that Serial Item Management (SIM) be pursued to identify populations of select items (parts, components, and end items), to mark all items in the population with a universally unique identification number,

and to enable the generation, collection, and analysis of maintenance data about each specific item. ISO/IEC 15434, Transfer Syntax for High Capacity ADC Media," will be used for unique identification.

7.3.4. DOD Materiel as a Corporate Resource. All DOD materiel is considered a corporate resource which may be allocated on a defense-wide basis according to priority. Service materiel is a Service resource that may be allocated on a defense-wide basis in time of need as determined by the Combatant Commanders.

7.3.5. Inventory Planning. As the DOD transitions to PBL, where performance is purchased as a package, sustainment and surge spares will be provided as part of the performance package. For commercially supported items of supply, inventory planning should be accomplished through PBL agreements with commercial suppliers. For organically supported items, inventory planning should be performed through performance agreements with organic activities or third party providers. Inventory planning includes: forecasting and aggregating customer demand, balancing new buys, replenishment stockage levels, and retained stock.

7.3.6. Seamless Supply to Operations. An integrated logistics supply chain, with surge capability, will provide support to weapon systems. All contractors must be able to operate within the defense logistics chain if required to do so.

7.3.7. Direct Delivery. Sustainment solutions employing PBL will include direct delivery of sustainment and surge spares. Direct delivery should minimize time or resource burdens placed on the receiving unit and operate within the logistics chain. Marking of military materiel will be accomplished using MIL-STD-129P, 15 Dec 02, DOD Standard Practice, Military Marking for Shipment and Storage, to ensure a smooth transition of materiel into the Defense Transportation System, if required.

7.3.8. Consumable and Reparable Items. PMs will select consumable and reparable item providers based upon best value to the government. This assessment shall include existing inventories and commercial arrangements, performance requirements, and appropriate materiel control.

7.3.9. Packaging. Procured items that enter the military distribution system will be packaged in compliance with MIL-STD-2073-1D, Standard Practice for Military Packaging, 15 Dec 1999. Other items are to be packaged in accordance with industry standards to the maximum extent allowable.

7.3.10. Disposal Issues. PMs are responsible for developing and executing disposal plans as part of TLCSM. Conventional routes using the Defense Reutilization and Marketing Service (DRMS) are to be employed for the disposal of surplus assets.

8. INDUSTRY AND INNOVATION

8.1. Scope

The aim of Industry and Innovation is to shape the relationship with industry to create value through a flexible, intelligent support chain.

8.2. Context

Sustainment solutions should seek to capitalize on the involvement of industry to achieve the best possible performance for the money. PMs should move from "provider to decider" and the shift toward contracting for performance and capability. Industry solutions must, however, support a dynamic operational environment that will change and adapt over time. This need for operational robustness requires training and exercising the military response with the sustainment solution during force preparation / pre-conflict.

8.3. Guiding Principles

The Industry and Innovation Guiding Principles are:

8.3.1. Partnering Principles. Competition remains the DOD's primary means to ensure value. Another way to ensure value for long-term or single-source arrangements is to offer additional options for good performance and "look back" award fees, which encourage contractors to make longer-term investments to improve performance and offset impact if investment resulted in loss of shorter term award fees. Even when partnering is not chosen as the method of delivery, partnering principles should be used, together with appropriate commercial processes.

8.3.2. Contract Review Points. Long-term contractual arrangements should contain review points and benchmarking agreements to maintain ongoing value for money.

8.3.3. Industry Sustainability and Surge Capability. Any sustainment solution with industrial components (prime and sub-contractor) must ensure capacity for sustainability and surge commensurate with warfighter requirements. These arrangements should not only be specified in the contracts but also should be subject to verification and routine audit. This should take into account possible coalition demands and global suppliers.

8.3.4. Shared Income from Use of Excess Capacity by Other Parties. Sustainment solutions should maximize opportunities to exploit surge capacity. When public and private parties enter into contractual arrangements and find they jointly possess excess capacity, they should routinely explore potential use of excess capacity. Any income derived from other party use of excess capacity should be used to offset cost of operation.

8.3.5. Public-Private Partnerships (PPP) Arrangements. Partnerships with industry are to be pursued when most cost-effective, justified by acceptable risk and in adherence to statutory requirements of CORE maintenance requirements.

8.3.6. Aggregated Support Contracts. To move toward an integrated, weapon system logistics chain, PMs may consolidate support contracts, when justified, based upon business case analyses. This includes the coherent aggregation of any Public-Private Partnership (PPP) / Contractor Logistic Support (CLS) / Contractors On Deployed Operations (CONDO) / performance-based arrangements, etc.

8.3.7. Exit Strategies. A realistic exit strategy will be maintained that addresses any contractual issues and user rights to ensure unfettered and ongoing access to, and maintenance of, all contractor-provided support systems including support information / data.

8.3.8. Transition to Innovation. To ensure against breaking the sustainment chain during transition to innovative solutions, comprehensive migration strategies will be developed.

8.3.9. Maintenance of the Defense Industrial Base. All sustainment solutions should consider their effect on the industrial base, particularly with reference to maintaining essential national industrial capability and security of supply in time of conflict. Such considerations may in some cases conflict with a pure value for money assessment.

9. INTEGRATED KNOWLEDGE ENVIRONMENT AND LOGISTICS C4I

9.1. Scope

The aim of this area is the integration of all logistics data and the extrapolation of knowledge from that data without human intervention.

9.2. Context

A reliable, secure and coherent design for integrated knowledge and C4I in the logistics domain is captured in the Enterprise Integrated Data Environment Architecture. This architecture provides community services consistent with the Global Information Grid Enterprise Services; supports the DOD-wide data strategy; includes logistics metadata registry and storage; and identifies authoritative data sources.

The Enterprise Integrated Data Environment Architecture is a key tenet of the logistics domain needed to support future operations. This architecture promotes the creation, application and sharing of knowledge to improve operational and business efficiency throughout the support chain, from the factory to the battlefield. Driven by TLCSM, the architecture's data strategy captures product, transaction, and financial data. The supporting C4I must be flexible enough to meet the needs of the future warfighter while sustaining current capabilities. The logistics C4I approach must be sufficiently integrated into operational C4I systems to provide the battlefield with a robust, deployable and reliable source of logistics information that meets the needs of expeditionary warfare.

9.3. Guiding Principles

The Integrated Knowledge Environment and Logistic C4I Guiding Principles are:

9.3.1. Logistics Integrated Knowledge Strategy. The Integrated Knowledge Environment represents the efficient sharing and exploitation of information and knowledge as operational assets. Information is a corporate asset; it should be created once, used many times and held only where appropriate. Efficient exploitation of information will require the adoption of integrated knowledge environment processes and linkage with a generic portfolio of corporate information services and systems. Information and knowledge for sustainment solutions will be consistent with the data strategy of the Enterprise Integrated Data Environment Architecture.

9.3.2. Information Requirement Definition. Data requirements for the logistics domain reside in the overarching Logistics Data Strategy. C4I capabilities supporting the strategy should be based on future support concepts, such as health status reporting from the battlefield to reach back support activities.

9.3.3. Storage, Security and Retrieval. Information must be easily accessible, verifiable, and credible. It must be structured in a manner permitting maximum flexibility in retrieval and processing. Information must be maintained securely at all points in its life cycle. Web technology will be used to access information. PMs should ensure that information driving sustainment solutions fits the operational architecture of the Enterprise Integrated Data Environment Architecture.

9.3.4. Data and Quality Standards. Information and data are to be managed as corporate assets. Data quality is a key enabler to information sharing, while data standards are fundamental to minimize internal and external interface information exchange requirements. AECMA International Specification for Technical Publications Utilizing a Common Data Base, S1000D, will be used for Interactive Electronic Technical Manuals (IETMs). The following standards will be used for Radio Frequency Identification (RFID):

ISO/IEC 15434	Transfer Syntax for High Capacity ADC Media
ISO/IEC 15459-1	Unique identifier for transport units – Part One: Technical Standard
ISO/IEC 15459-2	Unique identifier for Transport units – Part 2: Procedural Standard
ISO/IEC-15459-3	Unique identifier for transport units – Part 3: Unique Item Identification for Supply Chain Management
ISO/IEC 15961	RFID for Item Management – Data Protocol: Application interface
ISO/IEC 15962	RFID for Item Management – Protocol – Data encoding rules and logical memory functions
ISO/IEC 15963	RFID for Item Management – Unique Identification of RF Tag
ISO/IEC 18001	RFID for Item Management – Application Requirements Profiles
ISO/IEC 18047	RFID Device Conformance Test Methods
ISO/IEC 18046	RFID Tag and Interrogator Performance Test Methods
ISO/IEC 19789	RFID for Item Management – Application Programmer Interface
ISO/IEC 19762	Information Technology AIDC Techniques – Harmonized Vocabulary
ISO/IEC 24710	Information Technology AIDE Techniques – RFID for Item Management
ISO/IEC 18000	Air Interface Communications

9.3.5. Defense Logistics Initiatives. Information modernization is in a constant state of evolution. There continues to be numerous, on-going logistics information initiatives. PMs should contact the office of the Assistant Deputy Under Secretary of Defense (Logistics System Modernization) for the latest initiatives and align with or seek to exploit these initiatives.

10. PEOPLE AND TRAINING

10.1. Scope

The logistics workforce is a leading component of the DOD Human Capital Strategic Plan. The timely acquisition, retention and training of the logistics workforce are critical to support of an operationally ready military capability.

10.2. Context

Military manpower must always be appropriately trained and experienced to carry out support tasks. Likewise, a surge requirement for military manpower is necessary to execute wartime missions. Additional personnel are needed for recruiting, retention, ship to shore ratios, etc. PMs must have a full understanding of the individual and cumulative effects of sustainment solutions on manpower structures and training needs, both in the timeframe required and upon receipt of the deployment order. This should not undermine the need to minimize the deployed logistics footprint and the number of personnel in support functions. Manpower requirements to develop, operate and support a weapon system will reflect an optimal mix of government civilians, military and contractor personnel.

10.3. Guiding Principles

The People and Training Guiding Principles are:

10.3.1. Systems Approach to Training. Systems performance assumes near-perfect operators. Therefore, training should be developed, tested and deployed as a co-equal subsystem. The training subsystem will include training aids and devices, which are critical to the success of the training mission. Training superiority should consider simulation at combat training centers or "on demand" training, based upon the complexity of the equipment or process for which the training is provided.

10.3.2. Replacement and Augmentation of Military Manpower. It is DOD's intent to minimize footprint and reduce reliance on contractors during contingencies. While replacement of military manpower may be by the reserve or guard components, as well as by contractors, preference is given to the former. The test criteria are defense value for money, military cohesion, military minimum essential logistics capabilities, and operational risk. Furthermore, the cumulative impact of many innovative sustainment solutions must be understood in terms of overall military manpower readiness and meeting the operational task.

10.3.3. Union Consultation. Union and personnel management authorities are to be consulted throughout the process when a sustainment solution is likely to impact civilian staffs, as through restructuring, relocation, or transfer to a potential contractor.

11. REDUCED-TOTAL OWNERSHIP COSTS (R-TOCs)

11.1. Scope

The critical examination of weapon systems TOCs includes the assessing of long-term effects of acquisition, such as, the cost of operating, training, supporting, sustaining and disposing.

11.2. Context

Meeting a weapon system's cost-related design and development threshold criteria (e.g., cost per operating period), along with all other JCIDS-specific weapon system performance parameters, is a key factor in providing maximum, sustained system readiness at consistently optimal levels of affordability. While the cost-related performance parameters in Initial Capabilities Documents / Capabilities Development Documents, plus PM efforts at program initiation, are most focused upon total program cost mitigation, later technology insertion actions and transition to PBL strategies are opportune times to invest in cost-effective supportability. An R-TOC approach to life cycle management of logistics is pivotal in the drive for greater efficiencies and future affordability. The TOC for any new platform, system, equipment or service is to be compared with the nearest in-service equivalent to ensure that the main cost drivers have been identified and a strategy for reducing them is developed. Military capability must be sustained to meet the warfighter's requirements within acceptable levels of operational risk, with the appropriate resources being both budgeted for and affordable.

11.3. Guiding Principles

The R-TOC Guiding Principles are:

11.3.1. R-TOC Approvals. Projects and programs are to be managed with the aim of minimizing the TOC. This requires an inclusive multi-stakeholder approach so as to avoid stove-piped solutions that may benefit only one support process at the expense of others and, therefore, fail to achieve overall efficiency. A life cycle approach to include Cost As an Independent Variable (CAIV) and Value Engineering (VE), supported by a solid BCA, is essential to achieve balanced investment decisions. Milestone decisions must be supported by a costed acquisition strategy.

11.3.2. Investment Approvals. Sustainment solutions are to be optimized to benefit military capability as a whole while minimizing TOC. Risk-assessed investment appraisals, comparing support options, are fundamental to the investment decision-making process.

11.3.3. TOC Funding. Appropriate funding must be made available for weapon system support in the Future Year Defense Plan or Program Objectives Memorandum, as budgeted by the force provider in coordination with the PM.

11.3.4. TOC Management. The primary purpose of TOC management is to encourage the cost-effective use of resources. TOC analysis will be supported by appropriate financial management systems and include review of main cost drivers and projected impact of optimized business, procurement, support and contracting strategies to reduce the cost of delivering military products.

11.3.5. Management & Audit Trails. All key costing decisions should be clearly recorded with sufficient supporting data (including baselines and assumptions) to provide a management and audit trail.

12. RESOURCE MANAGEMENT

12.1. Scope

The management of financial processes to ensure accountability and optimum use of resources with equitable attention to investment in supportability-related analyses, products, and services that can be expected to generate a high return in terms of sustained system readiness.

12.2. Context

The role of the force provider, with assistance of the PM, is to ensure that adequate funding is in place throughout the life of the weapon system and that assets are safeguarded, properly accounted for and their use optimized.

12.3. Guiding Principles

The Resource Management Guiding Principles are:

12.3.1. Funding. Force providers need to ensure that funding is in place to provide in-service support. They will negotiate performance-based agreements using a range of funding / performance alternatives. Funding, once allocated, will be used to buy a level of performance from the PM.

12.3.2. Support Provider Agreement. When negotiating support provider performance-based agreements, PMs will include a range of costed performance levels. This will ensure rapid adjustment to funded support level in the execution year. PMs will execute support provider agreements using the actual funded level provided by the force provider.

12.3.3. Accounting. The PM will implement procedures and ensure systems are in place to provide accurate accounting and performance information.

12.3.4. Financial Requirement for Contractor Logistic Support. PMs must comply with the financial propriety associated with developing and implementing contracted arrangements.

13. ENVIRONMENT AND SAFETY (E&S)

13.1. Scope

The compliance with appropriate E&S legal, regulatory and policy requirements.

13.2. Context

The DOD needs to meet its E&S legal and duty of care responsibilities in a structured and auditable manner. E&S is not optional; adherence to the mandated policy is required.

13.3. Guiding Principles

The E&S Guiding Principles are:

13.3.1. Safety & Environmental Protection Law & Departmental Policy. Sustainment solutions are to comply with the law and DOD policy in respect to Safety and Environmental Protection in the logistics chain.

13.3.2. Provider Requirements. All sustainment solutions are to take account warfighter and support provider requirements for environmental protection and safety. The solutions must comply with DOD environmental and safety policy.

13.3.3. Equipment Safety Cases. E&S impacts are to be prepared for new systems and applied through life of weapon system. E&S assessments are to be applied to legacy systems where no formal E&S impacts have been prepared.

13.3.4. Breadth of E&S Compliance. DOD must comply with any US or Host Nation statutory legislation, and with any other international legislation, agreement, protocol or convention to which the US is a signatory, unless a specific exemption has been granted.

13.3.5. Contractors. The employment of a contractor does not mean that responsibility for E&S risks have been transferred to the contractor. For this reason, it is essential that individuals awarding contracts or employing contractors ensure that the E&S aspects have been taken into account and the extent to which the DOD retains and, therefore, needs to manage E&S risk is fully understood by all stakeholders.